

INTISARI

Rancang Bangun Meter Kadar Air Daging dengan Metode Kapasitansi Berbasis Arduino Uno

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Kadar air yang terkandung dalam bahan pangan sangat penting karena mampu mempengaruhi kualitas bahan pangan tersebut. Termasuk kadar air yang terkandung dalam daging mampu mempengaruhi daya ikat air yang menyebabkan nilai pH, susut masak, tekstur, serta keempukan daging berubah. Penelitian ini bertujuan untuk menghasilkan alat ukur kadar air daging berbasis sensor kapasitif, mengetahui pengaruh waktu pengukuran terhadap nilai kadar air terukur, mengetahui pengaruh ukuran daging uji pada wadah ukur terhadap nilai kadar air, mengetahui pengaruh perlakuan daging uji terhadap nilai kadar air, serta melakukan analisis statistik terhadap data hasil pengamatan. Penelitian ini menggunakan Arduino Uno, kapasitor keping sejajar, IC NE555, resistor 10k Ω , 100k Ω , dan 47 Ω , I2C, LED, serta LCD sebagai penampil hasil pengukuran. Hasil dari penelitian ini yaitu sensor kapasitif dapat membaca kadar air yang terkandung dalam daging. Waktu pengukuran dan hasil pembacaan nilai kadar air memiliki hubungan yang lemah, ditunjukkan oleh nilai koefisien korelasi sebesar 0,02 - 0,1 selama waktu 15 menit. Ukuran daging uji pada wadah ukur sangat mempengaruhi nilai kadar air yang terbaca. Perlakuan yang diberikan pada daging uji mempengaruhi hasil pengukuran nilai kadar air. Hasil pengukuran nilai kadar air menggunakan alat ini memiliki tingkat kepercayaan 95% dan faktor cakupan sebesar 2,26 dengan rentang nilai ketidakpastian sebesar 0,1 – 0,3.

Kata kunci : kadar air, sensor kapasitif, IC NE555, Arduino Uno

ABSTRACT

Design of Meat Moisture Meter With Capacity Method

Based on Arduino Uno

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The water content that contained in food is very important because it can affect the qualities the food material. Including the water content contained in the meat, it can affect the water binding capacity which causes the pH value, cooking losses, texture, and meat tenderness. This research aims to produce a measuring instrument for moisture content of meat based on capacitive sensors, decide the effect of measurement time on the measured moisture content, decide the effect of the size of the test meat on the measuring container on the value of the water content, determine the effect of the treatment of the test meat on the value of the water content, and perform statistical analysis of the observed data. This research uses Arduino Uno, parallel chip capacitor, IC NE555, 10k Ω , 100k Ω , and 47 Ω resistors, I2C, LED, and LCD as the display of measurement results. The result of this research is that the capacitive sensor can read the moisture content in meat. The measurement time and the reading of the water content value have a weak relations, indicated by the correlation coefficient value of 0.02 - 0.1 for 15 minutes. The size of the test meat in the measuring container greatly affects the value of the water content read. The treatment given to the test meat affects the results of measuring the water content value. The results of measuring the value of moisture using this tool have a confidence level of 95% and a coverage factor of 2.26 with an uncertainty value range of 0.1 - 0.3.

Keywords: *moisture content, capacitive sensor, IC NE555, Arduino Uno*